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## ABSTRACT

This document, which draws heavily on lessons learned during 11 years of the Southern Regional Education Board's High Schools That Work initiative, is intended to help state leaders review their existing system for assessing accountability in vocational education or plan such a system. The document begins with a discussion of the purpose of secondary vocational education. The following critical considerations for accountability are discussed in detail: (1) raising content standards; (2) measuring academic achievement against high standards; (3) emphasizing and measuring technical literacy; and (4) considering experiences after high school. The following guiding principles for aligning secondary vocational education with accountability efforts are explained: (1) make continuous improvement in academic and vocational content and instruction the primary focus; (2) set student achievement standards high enough for students to succeed after high school; (3) focus on things that matter to improving student achievement; (4) create a data collection and reporting process that links school and classroom practices with student achievement and tells local school leaders which practices are working; (5) make business/industry and postsecondary leaders partners in implementing reform; (6) conduct on-site technical assistance visits; (7) help schools use data and information effectively; and (8) improve and expand the use of technical literacy tests. (MN)



# A Look at Accountability for Secondary Vocational Education

By Gene Bottoms and Richard Makin

*This report is intended to help state leaders review the system they have or plan the system they need for accountability in secondary vocational education. Drawing heavily on lessons learned during 11 years of the Southern Regional Education Board's High Schools That Work initiative, the report addresses the question posed to HSTW staff by several state legislators: "What does accountability look like for secondary vocational education?" To answer this question, it is important to consider the purpose of secondary vocational education.*

## The Purpose of Secondary Vocational Education

Secondary vocational education is no longer just about preparing students for entry-level employment or jobs requiring other than a baccalaureate or an advanced degree. The purpose of secondary vocational education is to prepare students for both work and further education by 1) increasing the academic achievement of students enrolled in vocational courses, 2) ensuring that students are technically literate, and 3) ensuring that they can continue to learn in a career and in postsecondary education.

In considering an accountability system, educators and policy-makers must pay attention to the role of academics in secondary vocational education and to the relationships between academic and vocational teachers in high school. Educators and policy-makers need to consider these facts:

1. Quality vocational programs raise academic achievement. Success in the workplace and further education is based on academic knowledge and skills. Quality secondary vocational courses increase students' academic achievement.
2. Schools should be held accountable for improving the academic and technical achievement of students pursuing vocational studies. Vocational students should be taught the same academic core traditionally taught to only the "best" students. They also should participate in authentic learning experiences that will help them apply knowledge and skills learned in academic classes. One way to teach a more advanced academic core to some students is to get academic and vocational teachers to plan together.
3. A two-track curriculum is unacceptable if one track serves the "best" and the other serves the "rest." The SREB advocates a high school curriculum that requires all youths to complete an upgraded academic core and in-depth study in career/technical studies, advanced academic studies or a combination of both.

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4. Improvement of high school vocational/technical studies requires whole-school involvement in changing what is taught, how it is taught and what is expected of students in academic and vocational classes. It also requires structures that 1) make parents an integral part of planning and supporting their children in a demanding program of study, 2) enable academic and vocational teachers to work together, and 3) make greater use of the community for learning.

## Key Considerations for Accountability

There are key considerations for secondary vocational education in an era of accountability, including four critical considerations: content standards, academic achievement, technical achievement and experiences after high school.

### *Component #1: Raising Content Standards*

Too many high school students are allowed to take repetitive low-level academic courses, avoid mathematics and science in their senior year, enroll in vocational courses for easy elective credits, and complete undemanding vocational assignments. Secondary vocational education accountability must focus on an upgraded academic core and a career concentration, including:

- English – four full-year college-preparatory-level courses;
- Mathematics – three or more full-year courses, with at least two credits equal to Algebra I, geometry or higher-level courses;
- Science – three or more full-year courses, with two credits in chemistry, physics, applied physics or other lab-based college-preparatory-level science courses;
- Social studies – at least three credits in courses equivalent to college preparatory courses;
- Career concentration – four credits above the academic core in vocational/technical studies, academic studies or a combination of both.

Data from *HSTW* sites show that students who complete challenging English, mathematics and science courses have significantly higher achievement than students who do not. Further, students who complete all components of the *HSTW*-recommended curriculum — an upgraded academic core and a career concentration — have even higher achievement in reading, mathematics and science than those who do not.

The most successful schools in the *HSTW* network involve students and their parents early and often in planning a high school program of study aimed at specific goals for after high school. Parents at these schools meet with their children and a school adviser to outline a four- to six-year program of study. This gives students a reason for attending school and makes them think about where their high school experiences can take them.

Selected indicators include 1) the percentage of students who have programs of study for four years of high school and two years beyond, 2) the percentage of seniors completing an upgraded academic core, 3) the percentage of seniors completing either an academic or a vocational/technical concentration of related courses, and 4) the percentage of students completing both an upgraded academic core and either an academic or a vocational concentration of related courses.

## *Component #2: Measuring Academic Achievement Against High Standards*

It is not enough to give career-bound students access to an upgraded academic core and a planned career concentration. Academic and vocational teachers must provide instruction that helps students meet high achievement standards in reading, mathematics and science. States should set academic goals high enough so that graduates will be able to pass employment exams and avoid remedial courses in postsecondary studies.

High school students completing a career concentration must be able to meet or exceed academic achievement goals. One approach is the *HSTW* Assessment in reading, mathematics and science, based on the National Assessment of Educational Progress and administered by Educational Testing Service. Students who complete a challenging academic core and a career concentration and meet high achievement standards have an advantage over students who do not. In 1997 the SREB conducted a follow-up study of more than 6,500 graduates who participated in the 1996 *HSTW* Assessment. The study compared graduates who earned the *HSTW* Award of Educational Achievement<sup>1</sup> with those who did not. Award recipients were:

- More likely to enroll in further study — 83 percent, compared with 56 percent;
- More likely to attend a four-year college — 53 percent, compared with 25 percent;
- Less likely to need remedial courses — 15 percent, compared with 31 percent;
- Less likely to be unemployed at some point after graduation — 17 percent, compared with 25 percent.

More than 8,000 graduates in 1998 qualified to receive the *HSTW* Award of Educational Achievement. The award is proof that these youths took the right courses and met *HSTW* academic achievement goals.

In 1996 the BellSouth Corporation invited award recipients from several states to apply for jobs in the telecommunications field. As a result, almost 100 recipients took BellSouth's general qualifying exam. Ninety-seven percent of them passed the exam, compared with a normal passing rate of 51 percent by applicants in a pre-screened recruitment pool. As a result, BellSouth will exempt from its exams any high school graduate who earns the Award of Educational Achievement.

Employment and postsecondary placement exams can be used as "reality checks" as early as the 11th grade. Schools should invite employers and postsecondary partners to administer these exams to students before they enroll in college or look for work after graduation. When students gain firsthand understanding of what is expected and what they will need to know, they quickly see the connection between high school and the future.

The primary indicator for academic achievement is the percentage of students meeting or exceeding established academic-achievement goals benchmarked to postsecondary studies and employers' hiring standards.

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<sup>1</sup> To earn an Award of Educational Achievement, students completed three or four credits in a vocational concentration and two of the following: four credits in college-preparatory-level English; three credits in mathematics, including two in courses equivalent in content to courses offered in the college preparatory program; and three credits in science, including two in courses equivalent in content to courses offered in the college preparatory program. They also had to score at or above the SREB's goals in reading, mathematics and science on the 1996 *HSTW* Assessment.

### *Component #3: Emphasizing and Measuring Technical Literacy*

Technical literacy is the ability to 1) apply academic knowledge and skills to a broad field of technical studies; 2) read, understand and communicate in the language of the technical field; 3) understand technical concepts and principles; and 4) use technology to complete projects in a specific career/technical field.

The *HSTW* Assessment has included technical literacy from the beginning, but that component has not been developed or implemented because of lack of funds. However, four *HSTW* states are using written technical-literacy exams: Mississippi, North Carolina, Ohio and Oklahoma. The written exams contain multiple-choice items and open-ended questions. In two states, the exams include performance items with rubrics for rating students' work. The exams were validated by industry committees and are updated constantly. Standards are defined and communicated in some states, but not in others.

Schools use technical literacy exams to improve instruction, adjust course syllabi, raise expectations, and align the curriculum with state and national standards. Some states have eliminated ineffective programs as a result of the exams. A technical literacy exam can be used:

- To inform the public about the quality of a school's vocational program;
- As a "high-stakes" exam for students and schools;
- To award credit for advanced placement in a postsecondary career/technical program;
- To demonstrate to employers that graduates possess technical literacy skills in a career field.

Senior projects are one way to assess technical literacy. All seniors at technical high schools in Delaware complete such a project. The project allows them to demonstrate their grasp of problem-solving, written and oral communication, and academic and technical knowledge and skills. A senior project consists of three parts:

- A research paper that expands a student's knowledge of a career field;
- A product related to the career field;
- An oral presentation to a committee of teachers and community representatives.

Industry and trade association certification of a vocational program is an important part of quality vocational studies in high school. To receive certification, a school typically must:

- Offer a curriculum based on industry-established standards and receive endorsements from industry leaders;
- Develop laboratories that meet industry requirements;
- Give students an opportunity to take a certification exam administered by an independent testing service;
- Require training and certification standards for instructors;
- Expose students to workplace learning experiences and options.

Selected indicators for technical literacy include 1) the percentage of seniors passing written technical-literacy exams; 2) the percentage of seniors passing performance-based technical literacy exams; 3) the number of seniors completing industry-certified programs; 4) the number of employers waiving pre-employment technical-literacy testing for students who pass state technical-literacy exams; 5) the percentage of seniors meeting the standards of a quality senior project; and 6) the percentage of students receiving advanced-placement credit in an apprenticeship or a postsecondary program of study.

#### *Component #4: Experiences After High School*

Experiences after high school are the fourth key consideration for aligning secondary vocational education with accountability efforts. These experiences include additional training, continuing education and salaries earned. Some states can link high school graduates electronically to employers' records of earnings. The purpose is to learn whether graduates are finding work, to determine the standard industrial classification (SIC) in which each graduate is working, and to measure earnings of graduates. This approach holds promise, particularly if employers can report wages in specific occupations.

The Florida Education and Training Placement Information Program is an interagency data-collection system that obtains follow-up data on former students and program participants. Various state agencies provide graduate or participant files from their management information systems. The files include individual identifiers as well as demographic, socioeconomic and programmatic data. By linking to the administrative records of other state and federal agencies, Florida can describe the employment, military enlistment and continuing education experiences of participants.

Too many students, including those completing a vocational concentration of related courses, are entering college without proper academic preparation. Some states calculate college remediation rates by school district. Few, if any, can provide data on high school graduates completing a career concentration. An electronic connection among the databases of state departments of education and postsecondary institutions is essential in assessing whether students completing a career concentration are being adequately prepared academically for postsecondary studies.

The North Carolina Department of Public Instruction conducted a study of North Carolina's recipients of the 1996 *HSTW* Award of Educational Achievement. The purpose of the study was to determine the extent to which award recipients (compared with nonrecipients) had to take remedial courses at the state's community colleges. Award recipients:

- Were less likely to take remedial courses in mathematics or English — 18 percent, compared with 53 percent;
- Were more likely to be enrolled in college at the end of the first year — 82 percent, compared with 64 percent;
- Had a higher grade-point average for the semester and the entire year than all 1996 graduates enrolled in the community college system.

Selected indicators for experiences after high school include 1) the placement rate of graduates, 2) the wages and annual earnings of graduates who work, 3) the continuing education rate of graduates, and 4) the percentage of graduates taking remedial or developmental courses in postsecondary education.

# Eight Guiding Principles for Aligning Vocational Education with Accountability Initiatives

Guiding principles for aligning vocational education with accountability initiatives include:

1. Make continuous improvement in academic and vocational content and instruction the primary focus. This can be done best by designing an accountability system that connects students' academic and technical achievement and future success to school and classroom experiences.
2. Set student achievement standards high enough for students to succeed after high school. Achievement goals must have a degree of "stretch" that ensures success after high school. They must be high enough so that students can pass employers' qualifying exams and avoid remedial courses at community and technical colleges. Technical literacy goals should be set high enough so that students can pass employers' specialty exams. Setting high content and achievement goals recognizes that every school is different and that the nature of improvement varies widely. Not all schools will start at the same place, and not all of them will reach their goals at the same time.
3. Focus on things that matter in improving student achievement. The *HSTW* experience indicates that it would be impossible for a state to implement all of the indicators in this report immediately. Instead, state leaders are encouraged to focus on the percentage of students 1) completing an upgraded academic core; 2) completing a career concentration; 3) meeting achievement goals in reading, mathematics and science; and 4) meeting all three of the previous conditions.
4. Create a data-collection and reporting process that links school and classroom practices with student achievement and tells local school leaders which practices are working and which are not. To look at how school and classroom practices are affecting student achievement, states can redesign current systems to capture data on indicators of school and classroom practices and link the information to student achievement. A good accountability system will generate school reports that connect academic and technical achievement to school and classroom practices related to:
  - What students were taught;
  - What was expected of them;
  - How they were taught;
  - What guidance and advisement they received.

As a result of knowing the school's strengths and weaknesses, school leaders can design and offer professional development aligned with the school's plan for changing school and classroom practices to raise student achievement.

Accountability reports also should allow schools to measure how well their students are doing compared with students at similar schools. One way is to look at what pace-setting schools are doing to raise student achievement. These high-performing schools can serve as observation sites and mentor schools for lower-performing schools.

5. Make business/industry and postsecondary leaders partners with educators in implementing reform. Work with business/industry and postsecondary leaders to ensure that students who take the right courses and meet achievement goals are recognized and rewarded for their accomplishments.
6. Conduct on-site technical assistance visits. Schools needing the most help should receive technical assistance visits to help them improve. Technical assistance visits are designed 1) to identify best practices, 2) to determine and justify major challenges the school must address to increase student achievement, 3) to identify actions the school can take to address the challenges it faces over the next three years, and 4) to present the findings to teachers and administrators. Each school receives an oral report, a written report and follow-up "coaching."
7. Help schools use data and information effectively. Using detailed information to plan improvement is not a natural process. Schools need help in seeing the connection among data, what is happening at the school, and what should be done next. An adequately funded, ongoing professional-development program — flexible and responsive to school needs — should be part of accountability. The professional-development program should support the school's plan for improving school and classroom practices and student achievement.
8. Improve and expand the use of technical literacy tests. States should develop technical literacy tests that emphasize open-ended questions requiring understanding and application of concepts and skills in a career concentration. Make technical literacy tests "high-stakes" tests for students and teachers.

## Summary

This report presents ideas to guide state leaders in linking high school vocational education to a state system of accountability in ways that can improve academic and technical achievement.

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